

ABSTRACT OF THE DISCLOSURE

A motor includes a rotor shaft 7 which is fixed in the inside diameter portion of a magnet 6, a first coil 2 which is arranged adjacently to the magnet in the axial direction of the rotor shaft, a first outside magnetic pole portion 1a which is excited by the first coil, is inserted on the inner periphery side of the first coil, and is arranged so as to be opposed to a predetermined angle range of the outer peripheral surface of the magnet with a predetermined gap being provided between the first outside magnetic pole portion and the outer peripheral surface of the magnet, a second coil 4 which is arranged on almost the same plane as the first coil so as to be adjacent to the magnet in the axial direction of the rotor shaft, and a second outside magnetic pole portion 1b which is excited by the second coil, is inserted on the inner periphery side of the second coil, and is arranged so as to be opposed to a predetermined angle range of the outer peripheral surface of the magnet with a predetermined gap being provided between the second outside magnetic pole portion and the outer peripheral surface of the magnet in a state in which the phase shifts through  $(180/N)$  degree with respect to the magnetization portion of the magnet from the first outside magnetic pole portion.